Claims

1. A method for a communication infrastructure to preserve communication link bandwidth when supporting a packet communication session, the method comprising the steps of:

receiving, by the communication infrastructure, a session response message that indicates a destination IP address and a destination communication port for the packet communication session;

determining, by the communication infrastructure, a source IP address and a source communication port for the packet communication session;

receiving, by the communication infrastructure from a communication unit, a link-layer packet for the packet communication session; and

generating, by the communication infrastructure, an IP message header and a UDP message header for the link-layer packet using the source IP address, the source communication port, the destination IP address, the destination communication port, the link-layer packet, and a set of predetermined values to produce an internet protocol (IP) packet comprising the link-layer packet.

2. The method of claim 1 wherein the link-layer packet comprises an RLP data packet.

3. The method of claim 1 wherein the link-layer packet comprises at least one Radio Link Protocol (RLP) voice packet and wherein the IP packet comprises a voice-over-IP packet.

4. The method of claim 3 wherein the communication infrastructure comprises a wireless communication infrastructure, wherein the communication unit comprises a wireless mobile unit, wherein the wireless communication infrastructure comprises a dispatch agent gateway (DAG) and wherein the DAG produces the voice-over-IP packet.

5. The method of claim 4 wherein the step of determining comprises the step of determining that a predetermined IP address associated with the DAG is the source IP address and that a predetermined communication port associated with the DAG is the source communication port.

6. The method of claim 4 wherein the step of determining comprises the step of accessing a table that maps communication units to IP addresses and communication units to communication ports to determine the IP address and communication port associated with the communication unit for use as the source IP address and the source communication port.

7. The method of claim 4 wherein the step of determining comprises the step of accessing a PDSN to determine the IP address and communication port associated with the communication unit for use as the source IP address and the source communication port.

8. The method of claim 4 further comprising the step of sending, by the dispatch agent gateway, the voice-over-IP packet to the destination IP address via the Internet.

9. The method of claim 8 further comprising the step of sending, by the dispatch agent gateway, the voice-over-IP packet to the destination IP address via the PDSN.

10. The method of claim 4 further comprising the step of sending, by the dispatch agent gateway, the voice-over-IP packet to the destination IP address via an IP intranet.

11. The method of claim 1 wherein the session response message comprises a SIP invite final response message.

12. The method of claim 1 wherein the step of generating comprises the step of inserting predetermined values from the set of predetermined values into IP header fields selected from the group consisting of a version field, a header-length field, a type-of-service field, a flags field, a fragment-offset field, a time-to-live field, an options field, and a protocol field.

13. The method of claim 1 wherein the step of generating comprises the step of calculating a total-length IP header field value based on the length of the link-layer packet, the length of the IP message header, and the length of the UDP message header.

14. The method of claim 1 wherein the step of generating comprises the step of calculating an identification IP header field value by incrementing the identification field value calculated for a previous IP packet of the packet communication session.

15. The method of claim 1 wherein the step of generating comprises the step of calculating a checksum IP header field value by calculating a checksum of the IP message header.

16. The method of claim 1 wherein the step of generating comprises the step of inserting the source IP address into the source-IP-address field of the IP message header and the destination IP address into the destination-IP-address field of the IP message header.

17. The method of claim 1 wherein the step of generating comprises the step of inserting the source communication port into the source-port field of the UDP message header and the destination communication port into the destination-port field of the UDP message header.

18. The method of claim 1 wherein the step of generating comprises the step of calculating a checksum UDP header field value by calculating a checksum using the link-layer packet and UDP message header.

19. The method of claim 1 wherein the step of generating comprises the step of calculating a length UDP header field value based on the length of the link-layer packet and the length of the UDP message header.

20. A communication infrastructure comprising:

a packet controller capable of receiving a session response message that indicates a destination IP address and a destination communication port for the packet communication session, determining a source IP address and a source communication port for the packet communication session, receiving from a communication unit a link-layer packet for the packet communication session, and generating an IP message header and a UDP message header for the link-layer packet using the source IP address, the source communication port, the destination IP address, the destination communication port, the link-layer packet, and a set of predetermined values to produce an internet protocol (IP) packet comprising the link-layer packet.